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NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

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Date of mailing (day/month/year) 10 August 1999 (10.08.99)	
International application No. PCT/GB98/03622	Applicant's or agent's file reference J00024959WO
International filing date (day/month/year) 04 December 1998 (04.12.98)	Priority date (day/month/year) 05 December 1997 (05.12.97)
Applicant EVANS, Lester et al	

1. The designated Office is hereby notified of its election made:

 in the demand filed with the International Preliminary Examining Authority on:

25 June 1999 (25.06.99)

 in a notice effecting later election filed with the International Bureau on:2. The election was was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference J00024959WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB98/03622	International filing date (day/month/year) 04/12/1998	Priority date (day/month/year) 05/12/1997
International Patent Classification (IPC) or national classification and IPC H04M3/50		
Applicant ORANGE PERSONAL COMMUNICATIONS SERVICESet al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 25/06/1999	Date of completion of this report 25.02.2000
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Pais Gonçalves, A Telephone No. +49 89 2399 8806 

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/03622

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-14 as originally filed

Claims, No.:

4-11,15 as originally filed

1-3,12-14 as received on 03/12/1999 with letter of 02/12/1999

Drawings, sheets:

1/5-5/5 as originally filed

2. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

3. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB98/03622

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-15
	No: Claims
Inventive step (IS)	Yes: Claims 1-15
	No: Claims
Industrial applicability (IA)	Yes: Claims 1-15
	No: Claims

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

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The following documents (D) are referred to in this report:

D1: EP-A-0 631 452 (COFIRA SA) 28 December 1994

D2: EP-A-0 588 101 (ROLM CO) 23 March 1994

V.

1. The present invention relates to a method of providing a mailbox answerphone service to a caller during a call directed to a number commonly used by different subscribers of a mobile communications system, according to the pre-characterizing part of Claims 1 or 13.
2. This preamble of Claims 1 and 13 is based on the disclosure of D1 or D2, any of them representing the nearest prior art and disclosing a system wherein the mailbox associated with a subscriber is identified by an identification code.
3. A **problem** associated with calls of international origin is related to the amount of signalling data passed with the call. The present invention proposes a **solution** providing a method processing the call according to its origin.
4. Said solution is not disclosed in or rendered obvious by the available prior art and Claims 1 or 13 (refer to section VIII) fulfil thus the requirements of Article 33(1) PCT in respect of novelty, inventive step and industrial applicability. The same applies to dependent Claims 2 to 12, 14 and 15, which contain further refinements of the main embodiments of the independent claims.

VII.

1. At least one of the cited documents **D1** or **D2** would have to be **acknowledged** and briefly discussed in the opening part of the description, Rule 5.1 (a) (ii) PCT, making clear the inventive contribution of the claimed invention over the prior art.
2. In order to fulfil the requirements of Rule 5.1(a)(iii) PCT, the above-referred technical problem of the invention (cf. V.3) would have to be indicated in the description.

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VIII.

1. The present application contains two independent claims (1 and 13) relating to a unique method of providing a mailbox answer phone service essentially having **identical scope**.
 - 1.1 Thus the claims as a whole are not clear and concise and hence the requirements of Article 6 PCT are not met.
 - 1.2 Having regard to the requirements of Rule 6.4(a) PCT, it is considered appropriate in the present case to use only one independent claim corresponding to this single category and dependent claims as appropriate.

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CLAIMS:

1. A method of providing a mailbox answerphone service to a
5 caller in a mobile communications system during a call directed to a directory
number used commonly by different ones of the system's subscribers to
access their mailboxes, wherein said answerphone service identifies a mailbox
associated with a subscriber by means of an identification code,
characterised in that said method comprises:
10 entering either a first mode of answerphone operation or a second,
different, mode of answerphone operation in dependence on information
received during call establishment indicating whether said call is of
international origin.
- 15 2. A method according to claim 1, comprising in said first mode
of operation, if said call is not diverted, initially providing a message retrieval
service, and if said call is diverted, initially providing a message deposit
service.
- 20 3. A method according to claim 2, wherein whether or not said
call is diverted is determined from information received during call
establishment.

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12. A method according to claim 10 or 11, wherein a message retrieve service is initially provided to said caller if:

(a) said divert flag is not set and said CLI signal is associated with said call; or

5 (b) said divert flag is not set, said CLI signal is not associated with said call, and identification code is received from said caller during said call, and

in said retrieve service a stored voice message is retrieved and provided to said caller.

10

13. A method of providing a mailbox answerphone service to a caller in a mobile communications system during a call directed to a directory number used commonly by different ones of the system's subscribers to access their mailboxes, wherein said answerphone service identifies a mailbox associated with a subscriber by means of an identification code,

15

characterised in that said method comprises:

automatically entering either a first mode of answerphone operation if said call is of national origin or a second, different, mode of answerphone operation if said call is of international origin.

20

14. A method according to claim 13, wherein the origin of said call is derived from information received during call establishment.

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/GB98/03622 (22) International Filing Date: 4 December 1998 (04.12.98) (30) Priority Data: 9725866.9 5 December 1997 (05.12.97) GB (71) Applicant (for all designated States except US): ORANGE PERSONAL COMMUNICATIONS SERVICES LIMITED [GB/GB]; St James Court, Great Park Road, Almondsbury, Bristol BS12 4QJ (GB). (72) Inventors; and (75) Inventors/Applicants (for US only): EVANS, Lester [GB/GB]; Orange Personal Communications Services Limited, St James Court, Great Park Road, Almondsbury, Bristol BS12 4QJ (GB). CHAPMAN, Neil [GB/GB]; Orange Personal Communications Services Limited, St James Court, Great Park Road, Almondsbury, Bristol BS12 4QJ (GB). (74) Agents: SPAARGAREN, Jerome et al.; R.G.C. Jenkins & Co., 26 Caxton Street, London SW1H 0RJ (GB).		(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: MAILBOX ANSWERPHONE SERVICE FOR MOBILE COMMUNICATIONS		
(57) Abstract <p>A service module is provided for use in a mobile communications system. The service module provides services to a calling user such as an answering service comprising several individual mailboxes. The service node uses an international origin indicator received during call establishment to detect a call for which an international answerphone mode should be employed. The service node is able to detect a selection indicator provided by a subscriber making a call from another subscriber's handset, to thereby allow the caller to access his/her own mailbox from another's handset.</p>		

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MAILBOX ANSWERPHONE SERVICE FOR MOBILE COMMUNICATIONS

This invention relates to mobile communications, and more particularly but not exclusively to apparatus for use in a mobile communications system such as a GSM (Global System for Mobile
5 communications) digital cellular radio network, and to a method of providing a message service to a user of such a mobile communications system.

A conventional GSM network is schematically illustrated in Figure 1. A mobile switching centre (MSC) 2 is connected via communication links to a
10 number of base station controller (BSCs) 4. The BSCs 4 are dispersed geographically across areas served by the mobile switching centre 2. Each BSC 4 controls one or more base transceiver stations (BTSs) 6 located remote from, and connected by further communication links to, the BSC 4. Each
15 BTS 6 transmits radio signals to, and receives radio signals from, mobile stations 8 which are in an area served by that BTS 6. That area is referred to as a "cell". A GSM network is provided with a large number of such cells, which are ideally contiguous to provide continuous coverage over the whole network territory.

A mobile switching centre 2 is also connected via communication
20 links to other mobile switching centres in the remainder of the mobile communications system 10, and to a public service telephone network (PSTN), which is not illustrated. The mobile switching centre 2 is provided

with a home location register (HLR) 12 which is a database storing subscriber authentication data including the international mobile subscriber identity (IMSI) which is unique to each mobile station 8. The IMSI is also stored in the mobile station in a subscriber identity module (SIM) along with other
5 subscriber-specific information.

The mobile switching centre 2 is also provided with a visitor location register (VLR) 14 which is a database temporarily storing subscriber authentication data for mobile stations which are active in the area served by the mobile switching centre 2.

10 The mobile switching centre 2 may also be provided with a subscriber location register (SLR) 18 which is a database storing data relating the HLRs and VPSs of the network with the network's subscribers.

The GSM network supports a variety of services. One such service is an answerphone service. The answerphone service, among other services, is
15 implemented on a Voice Processing System (VPS) 16. The VPS 16 is linked to the mobile switching centre 2. Incoming calls to the MSC 2 which are not answered by a called subscriber are automatically forwarded to the VPS 16. Figure 1 only illustrates a single VPS 16. However, a mobile communications network generally comprises several VPSs 16 each serving a
20 plurality of subscribers. Various implementations of the answerphone service are possible, of which one example is described below.

In the implementation which this invention concerns, the answerphone service is accessed by means of one or more directory numbers which may be called by all, or at least a plurality of, subscribers, and possibly non-subscribers, to access the service (hereinafter referred to as “common
5 telephone numbers of the answerphone service”). For a subscriber, the common number may be dialled manually, or generated by the handset itself on the subscriber pressing a “dial answerphone option”.

In other implementations, each subscriber is provided with two directory numbers, one identifying the subscriber’s handset and the other
10 identifying the subscriber’s mailbox. If a call is made to the number identifying the subscribers mailbox, the subscriber is allowed to access their messages, if any, sometimes subject to entry of a personal PIN code for the subscriber.

The answerphone service provides a personal mailbox for each
15 subscriber to the answerphone service. When a call is forwarded to a subscriber’s mailbox, a personal message of the subscriber is played to the caller. The caller may then leave a voice message in the mailbox. The subscriber is notified by a GSM short message that a message has been deposited in the subscriber’s mailbox. The subscriber can then access his/her
20 mailbox in order to retrieve the message.

A call to the subscriber which is not answered is automatically forwarded to the answerphone service and the called subscriber’s telephone

number is used to access the subscriber's mailbox. However, a call to the subscriber may not only be forwarded if the called subscriber is busy, out of coverage or does not answer, but also if the subscriber's elects, via an option on the handset, to have the call forwarded to his mailbox. Such a call is referred to as a conditionally diverted call. The subscriber can elect which calls, i.e. the calls from which callers, are to be diverted. The subscriber sets on the handset a telephone number where a call is to be diverted to. That telephone number may be a telephone number which subscribers commonly use to access the answerphone service.

10 The directory number (MSISDN) of the subscriber to which the call is directed is transmitted as the CLI (calling line identity) on diversion of a call from the subscriber's handset. The CLI, being unique for each subscriber, can be used by the VPS to access the subscriber's mailbox.

15 If a subscriber wants to access the answerphone service in order to retrieve a message from his/her mailbox, the subscriber dials the common telephone number of the answerphone service on his/her handset. The retrieval call can be automatically forwarded to the subscriber's mailbox by using the CLI. An incoming retrieval call can be distinguished from a conditionally diverted call by the lack of a divert flag which is set on diversion and transmitted to the answerphone service.

20

 If a subscriber wants to access his/her mailbox from abroad, i.e. outside the coverage area of the home network (referred to as a "roaming"

subscriber), the call is directed to the answerphone service via the visited network. However, no CLI is transmitted and the subscriber is not forwarded automatically to his/her mailbox. Rather, the mailbox number has to be entered manually to identify the mailbox from which a call is to be retrieved.

5 According to one aspect of the present invention, there is provided a method of providing a mailbox answerphone service to a caller in a mobile communications system during a call directed to a directory number used commonly by different ones of the system's subscribers to access their mailboxes, wherein said answerphone service identifies a mailbox associated
10 with a subscriber by means of an identification code, said method comprising: entering either a first mode of answerphone operation or a second, different, mode of answerphone operation in dependence on information received during call establishment indicating whether said call is of international origin.

15 If a subscriber is roaming, a conditionally diverted call is forwarded to the home network via a visited network using the common number for the answerphone service.

 Using the present invention, a conditionally diverted call of international origin can be distinguished from an international retrieval call
20 even though the visited network may not transmit a divert flag. In an embodiment of the invention, an incoming international conditionally diverted call may initially automatically be treated in the same manner as an incoming

international retrieval call, the caller may enter an indicator when message deposit is desired or vice-versa.

The CLI is generally lost when a call originating in a visited network is transmitted to the home network. Accordingly, though a diverted call is forwarded to the answerphone service using the international diversion number, the subscriber's mailbox cannot be accessed automatically by the VPS without the CLI. With an embodiment of the present invention, the user enters the required identification code for the VPS to access the subscriber's mailbox.

According to a further aspect of the invention there is provided a method of providing a mailbox answerphone service to a caller in a mobile communications system, wherein said answerphone service identifies a mailbox associated with a subscriber by means of an identification code, said method comprising: receiving a call from a mobile handset, said call being directed to a directory number used commonly by different subscribers to access their mailboxes; allowing said caller to input a selection indicator during said call; and (a) if said indicator is not received, detecting a first identification code associated with said mobile handset from information received during call establishment and providing a message retrieve service to allow the caller to retrieve messages from the mailbox associated with said first identification code, or (b) if said indicator is received, allowing the user to input a second identification code and providing a message retrieve service

to allow the caller to retrieve messages from the mailbox associated with said second identification code.

A subscriber is thus able to use another subscriber's handset to retrieve a message from his/her mailbox, whilst the retrieval call is otherwise
5 automatically forwarded to the mailbox associated with the subscriber of the used handset.

An embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a block diagram of a mobile communications network;

10 Figure 2 is a flow diagram showing an overview of steps taken by a VPS when receiving a call in accordance with the embodiment of the present invention;

Figure 3 is a flow diagram showing steps taken by a VPS when in a normal deposit mode in accordance with the embodiment of the present
15 invention;

Figure 4 is a flow diagram showing steps taken by a VPS when in a normal retrieve mode in accordance with the embodiment of the present invention; and

Figure 5 is a flow diagram showing steps taken by a VPS when in an
20 international mode in accordance with the embodiment of the present invention.

Figure 1 shows a conventional mobile communications network. The mobile communications network is described in detail hereinabove and will not be repeated. The answerphone service and the service module in accordance with the embodiment of the present invention are implemented on the VPS 16. However, alternatively, the service module may also be provided
5 outside the VPS 16 as a separate station with links to the VPS 16 and the MSC 2.

Figure 2 illustrates the steps taken by the service module in the VPS 16 when processing a call directed to a common telephone number of the answerphone service. After a call is received in step 20, the service module
10 checks in step 22 whether the incoming call is a diverted call, i.e. whether a divert flag in the communications protocol from the MSC 2 is set. Such information is generally only available in the signalling associated with a call if the subscriber uses his/her handset within the home network area, i.e. if the
15 subscriber's handset communications with the MSC 2 via the BTSs 6 and the BSCs 4 rather than via a visited network. In the case of a set divert flag, the service module proceeds to the normal deposit mode in step 24 as is described hereinbelow in connection with Figure 3. If the divert is not set, the service
20 module checks in step 26 whether the incoming call is provided with the CLI information. If this is the case, it can be assumed that the caller is a subscriber who calls from inside the home network (the CLI is not passed over the international interconnect signalling links) and wishes to retrieve a message

from the answerphone service. Accordingly, the service module proceeds to the normal retrieval mode at step 28 which is described in connection with Figure 4, identifying the mailbox from the subscriber's CLI.

If the CLI is not present, the service module checks in step 30 whether
5 the number of the mailbox (the directory number of the subscriber having the mailbox) to be accessed is known. This may be the case if the mailbox number was previously entered by the caller (a procedure to be described below) and the call subsequently is diverted to another VPS due to a call drop back. This is because, in this embodiment, a single VPS does not provide the
10 answerphone for all subscribers. Rather, each of a plurality of VPSs provides the answerphone for a subset of all subscribers. In a situation where a call is forwarded to a VPS to be proceeded to the answerphone service although the mailbox to be accessed is managed by another VPS, the current VPS identifies the correct VPS via the SLR 18 and MSC 2 and redirects the call to
15 the correct VPS, appending the mailbox number to the destination address, the routing number of the correct VPS forming the prefix of that address. Situations where a call drop back may occur are described hereinafter.

Accordingly, in the case of a call drop back, the mailbox number is contained in the destination address specified in signalling associated with the
20 call. In this case, the service module proceeds to step 32 and checks whether the caller is abroad, i.e. whether the signalling associated with the call indicates a call of international origin. An international call is then processed

in the international mode at step 34, whereas a national call is processed in the normal retrieval mode at step 36. The service module proceeds the call to step 36 if a call by a subscriber to the common number of the answerphone service from a national phone other than his/her handset, and for which the CLI is
5 unavailable, is redirected to another VPS due to a call drop back.

If no mailbox number is detected in step 30, the service module generates a prompt in step 38 for the caller to enter into his/her telephone the number of the mailbox to be accessed. There are three types of incoming calls that are processed in step 38. The first type is a call originated abroad to the
10 common number of the answerphone service from a subscriber who wishes to retrieve a message from the answerphone service. The second type is a call to a subscriber abroad, which call is diverted to the answerphone service via a visited network which does not pass the divert flag or provide the CLI in the signalling sent over the interconnect links. The third type is a call to the
15 common number of the answerphone service of national origin from a subscriber using a phone other than his/her handset, and for which the CLI is unavailable, first being processed by a VPS.

After reception of a number which has been entered by the caller into his/her telephone in step 40, the service module checks in step 42 whether the
20 entered number is a valid mailbox number. If no valid mailbox number has been entered, the service module returns to step 38. Otherwise, the service module proceeds to step 43 and checks whether the mailbox corresponding to

the entered mailbox number is managed by a different VPS and, in that case, causes a call drop back at step 44. If the mailbox is managed by the same VPS, the origin (whether international or national) of the call is checked by determining whether the international origin flag is set in the signalling associated with the call, step 45. If the call is of international origin, the call is processed in international mode, step 46. Otherwise, the call is processed in normal retrieval mode, step 48.

Figure 3 shows the steps taken by the service module in the normal deposit mode. A set divert flag at step 22 in Figure 2 indicates that a call has arrived at a subscriber's handset within the home network area but has subsequently been diverted to the VPS. However, the subscriber's CLI is not necessarily available since the subscriber has the option to preset his/her handset not to transmit the CLI. Accordingly, the service module checks in step 50 whether the CLI is available. If the CLI is available, the CLI is used in step 52 to identify the subscriber's mailbox number. If no CLI is available, the service module prompts the caller in step 54 to enter the mailbox number, receives the mailbox number in step 56 and verifies in step 58 whether a valid number has been entered. The identified/entered mailbox number is used to access the subscriber's mailbox in step 60. The service module then plays a personal deposit message by the subscriber to the caller in step 62 and receives a voice message from the caller in step 64.

Figure 4 shows the steps taken by the service module in the normal retrieval mode. The service module proceeds to the normal retrieval in three cases. The first and second case are shown in Figure 2. In the first case, the received call is not diverted and is provided with the CLI, this being the
5 directory number of the handset from which the call is made. Accordingly, in this case, the call has a national origin and is directed to a common telephone number of the answerphone service. The second case results if a subscriber has entered his/her mailbox number to access his/her mailbox via a national telephone call to a common telephone number of the answerphone service
10 from a telephone other than his/her handset.

The normal retrieval mode starts with the playing of a retrieval message to the caller in step 66. The retrieval message may comprise a retrieval message which allows the user to select from various services such as the retrieval of particular ones of the messages on a subscriber's mailbox,
15 the deletion of messages, etc. If the star key of the caller's telephone is pressed during the playing of the retrieval message as indicated at step 68, the service module proceeds to step 70 and prompts the user to enter a mailbox number (the directory number of the subscriber having the mailbox) which is desired to be accessed. The service module receives a number in step 72 and
20 checks in step 74 whether the entered number is a valid mailbox number. If the entered number is invalid, the service module returns to step 70. Otherwise, it checks in step 76 whether the mailbox associated with the

entered mailbox number is provided in the current or in a different VPS. In the former case, the service module returns to step 66. In the latter case, the service module initiates a call drop back in step 78.

If the star key has not been pressed in step 68, the service module checks in step 80 whether a mailbox number is available. Only if no mailbox number is available, the CLI (the directory number associated with the handset being used) is used to obtain the mailbox number in step 82. This is to prevent that a wrong mailbox is accessed if a subscriber uses another subscriber's handset to access his/her mailbox, namely the mailbox associated with the CLI and not the mailbox associated with an entered mailbox number. In step 84, the service module prompts the caller to enter a PIN code in order to get authorised access to a mailbox. The PIN code is received in step 86. If the star key is pressed at this stage in step 87, the service module proceeds to step 70. Otherwise, the entered PIN code is checked for validity in step 88. Step 84 is repeated if the entered PIN code is invalid, whereas the mailbox is accessed in step 90 on entry of a valid PIN code. The service module then proceeds to step 92 and plays the message to be retrieved to the calling subscriber.

Figure 5 illustrates the steps taken by the service module in the international mode. The international mode either provides for the deposit of messages for a subscriber by a caller, or for the retrieval of messages by a subscriber. Due to a lack of information in the international signalling, the

two cases are distinguished by DTMF input by the subscriber on connection of the call to the answerphone service.

In step 94, a mailbox is accessed by using the mailbox number which previously had to be entered. The service module then plays a personal
5 deposit message by the subscriber in step 96. If during this time the star key of the used telephone is pressed, the service module proceeds to the normal retrieval mode in step 100. Otherwise, the service module receives and stores a message from the caller in step 102.

10 It should be noted that the present invention is not limited to the embodiment as described hereinabove. In particular, the steps taken by the service module may well be applied in a different order. It is envisaged that various modifications and variations to the above described embodiment could be made, without falling outside the scope of the present invention which is to be determined from the appended claims.

CLAIMS:

1. A method of providing a mailbox answerphone service to a
5 caller in a mobile communications system during a call directed to a directory
number used commonly by different ones of the system's subscribers to
access their mailboxes, wherein said answerphone service identifies a mailbox
associated with a subscriber by means of an identification code, said method
comprising:
- 10 entering either a first mode of answerphone operation or a second,
different, mode of answerphone operation in dependence on information
received during call establishment indicating whether said call is of
international origin.
- 15 2. A method according to claim 1, comprising in said first mode
of operation, if said call is not diverted, initially providing a message retrieval
service, and if said call is diverted, initially providing a message deposit
service.
- 20 3. A method according to claim 2, wherein whether or not said
call is diverted is determined from information received during call
establishment.

4. A method according to claim 1, 2 or 3, comprising in said second mode of operation providing either a message deposit service or a message retrieve service in dependence on the receipt of a selection indicator
5 from said caller during said call.

5. A method according to claim 4, wherein in said second mode said caller, after inputting said identification code during said call, is initially prompted for a voice message to be received and stored, and said message
10 retrieve service is provided if said indicator is received from said user.

6. A method according to claim 4 or 5, wherein said indicator comprises a DTMF tone.

15 7. A method according to any preceding claim, comprising prompting said caller for said identification code if said identification code is otherwise not associated with said call when received.

8. A method according to any preceding claim, wherein said
20 identification code corresponds to a directory number of said subscriber.

9. A method according to any preceding claim, wherein a call of international origin is identified by means of an international origin indicator in signalling associated with said call.

5 10. A method according to claim 1, wherein said call is associable with a divert flag, a calling line identity (CLI) signal, and an international origin indicator, wherein said divert flag is set if said call is diverted from a mobile station to said apparatus and said mobile station is located within a coverage area of said mobile communications system, said CLI signal is
10 associated with said call if the call originates or is diverted from a mobile station within said coverage area and said mobile station is preset to transmit said CLI signal, and said international origin indicator is associated with said
15 call if said call originates or is diverted from a mobile station and said mobile station is used at a location causing said international origin indicator to be sent to said mobile communications system during call establishment.

11. A method according to claim 10, wherein a message deposit service is initially provided to said caller if said divert flag is set, and in said
20 message deposit service said caller is prompted for a voice message to be received and stored.

12. A method according to claim 10 or 11, wherein a message retrieve service is initially provided to said caller if:

(a) said divert flag is not set and said CLI signal is associated with said call; or

5 (b) said divert flag is not set, said CLI signal is not associated with said call, and identification code is received from said caller during said call, and

in said retrieve service a stored voice message is retrieved and provided to said caller.

10

13. A method of providing a mailbox answerphone service to a caller in a mobile communications system during a call directed to a directory number used commonly by different ones of the system's subscribers to access their mailboxes, wherein said answerphone service identifies a mailbox associated with a subscriber by means of an identification code, said method comprising:

15

automatically entering either a first mode of answerphone operation if said call is of national origin or a second, different, mode of answerphone operation if said call is of international origin.

20

14. A method according to claim 13, wherein the origin of said call is derived from information received during call establishment.

15. A method according to any preceding claim, wherein said common directory number may be used by all of the system's subscribers to access said answerphone service.

5

16. A method of providing a mailbox answerphone service to a caller in a mobile communications system, wherein said answerphone service identifies a mailbox associated with a subscriber by means of an identification code, said method comprising:

10 receiving a call from a mobile handset, said call being directed to a directory number used commonly by different subscribers to access their mailboxes;

allowing said caller to input a selection indicator during said call; and

15 (a) if said indicator is not received, detecting a first identification code associated with said mobile handset from information received during call establishment and providing a message retrieve service to allow the caller to retrieve messages from the mailbox associated with said first identification code; or

20 (b) if said indicator is received, allowing the user to input a second identification code and providing a message retrieve service to allow the caller to retrieve messages from the mailbox associated with said second identification code.

17. A method according to claim 16, wherein each said identification code corresponds to a directory number of a different one of the system's subscribers.

5

18. A method according to claim 16 or 17, further comprising in (a) and/or (b):

prompting said caller for a security code associated with the mailbox being accessed.

10

19. A method according to claim 16, 17 or 18, wherein said indicator comprises a DTMF tone code.

20. A Voice Processing system for a mobile communications system, adapted to perform the method of any of claims 1 to 19.

15

21. Apparatus for use in a mobile communications system, said apparatus being adapted to store messages for subsequent retrieval by a subscriber of the mobile communications system wherein said apparatus is adapted to identify a first subscriber making a call to retrieve a message by means of an identification signal automatically forwarded to said apparatus during call establishment, said signal identifying the equipment being used by

20

said subscriber, and wherein said apparatus is further adapted to identify a second subscriber, on receipt of a request from said second subscriber during said call, by means of other information supplied by said second subscriber during said call.

5

22. Apparatus for use in a mobile communications system, said mobile communications system being arranged to establish a communications link with said apparatus in response to a call by a user, said apparatus being responsive during said call to receipt of a response selection indicator, and to receipt of a number of identification codes each being associated with a different mobile subscriber, wherein said apparatus is arranged to select one of said mobile subscribers and/or to select one of a plurality of predetermined responses if said response selection indicator is received, and otherwise to automatically provide a particular response relating to one of said mobile subscribers.

15

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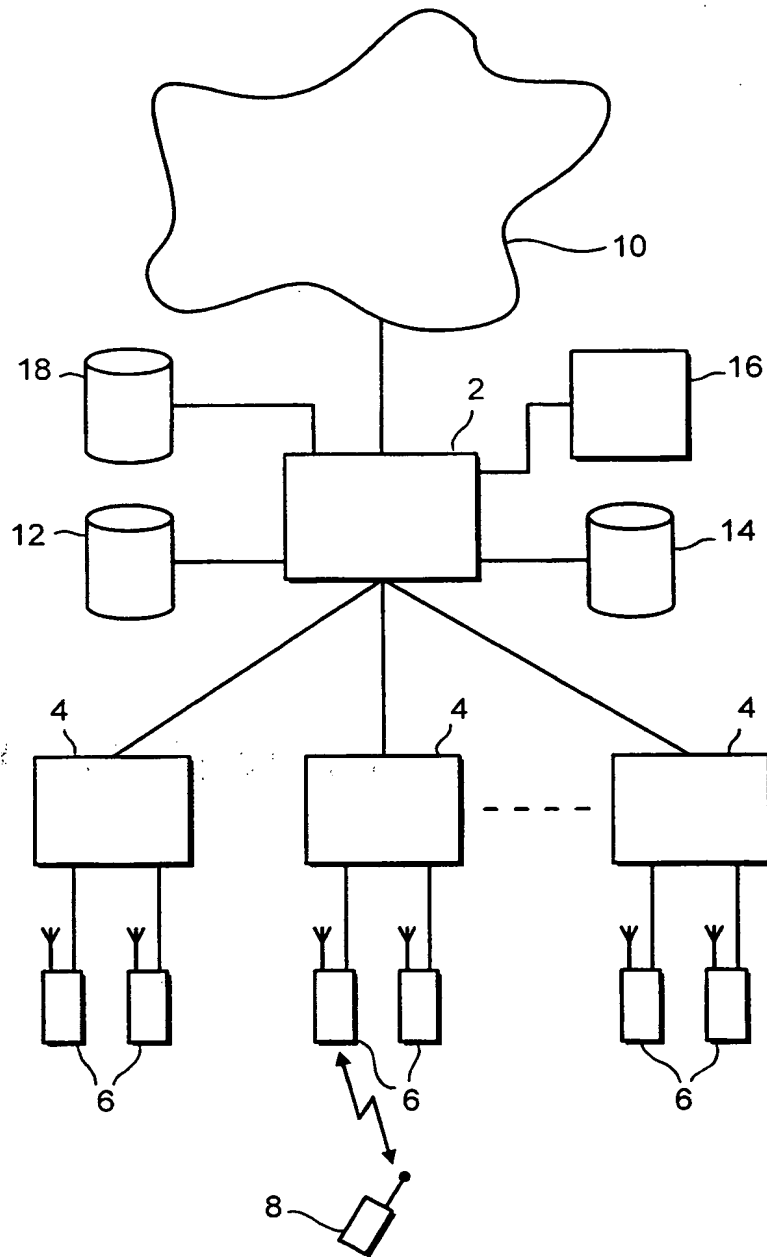


FIG. 1

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VPS OVERVIEW

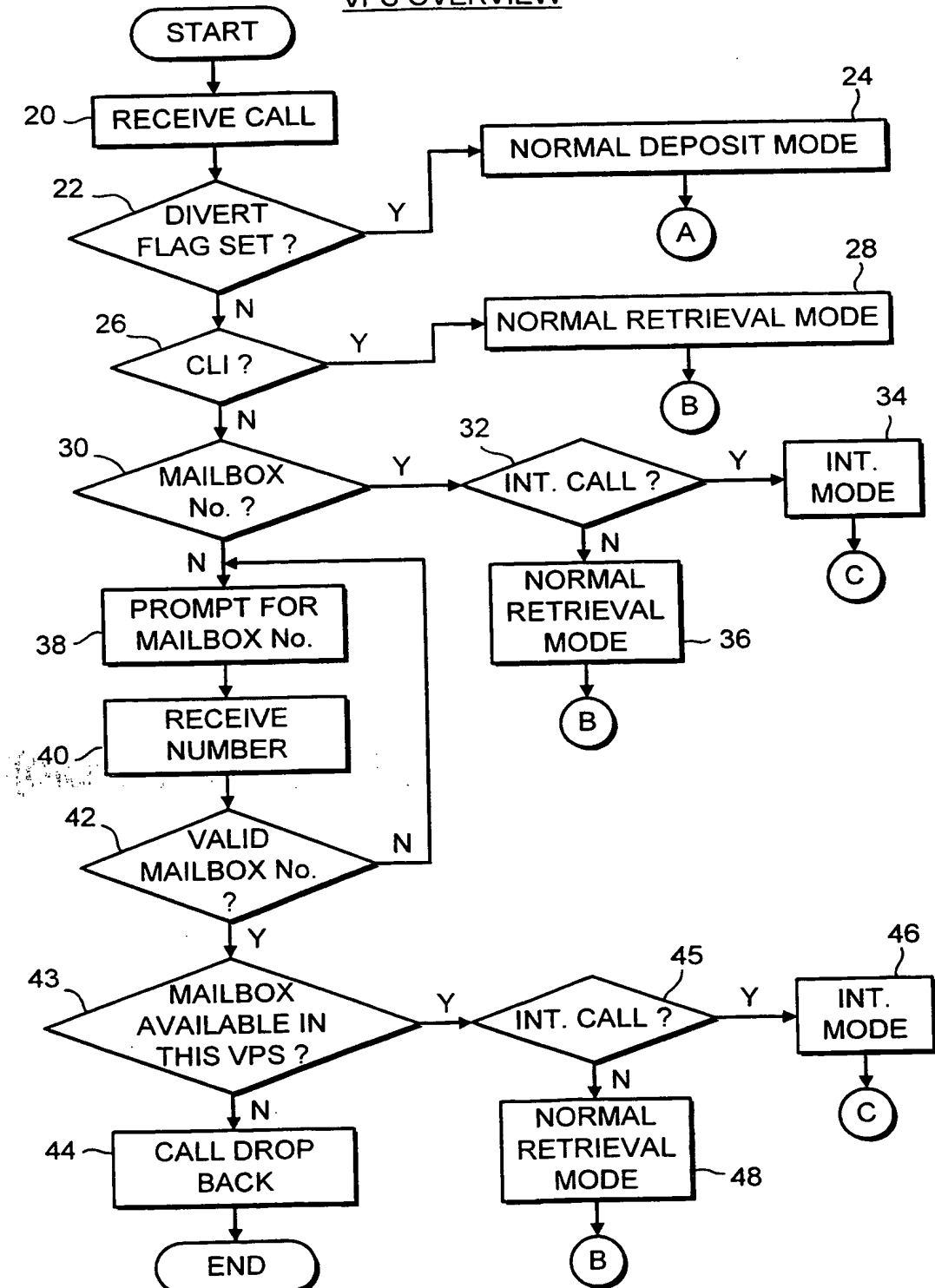


FIG. 2

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NORMAL DEPOSIT MODE

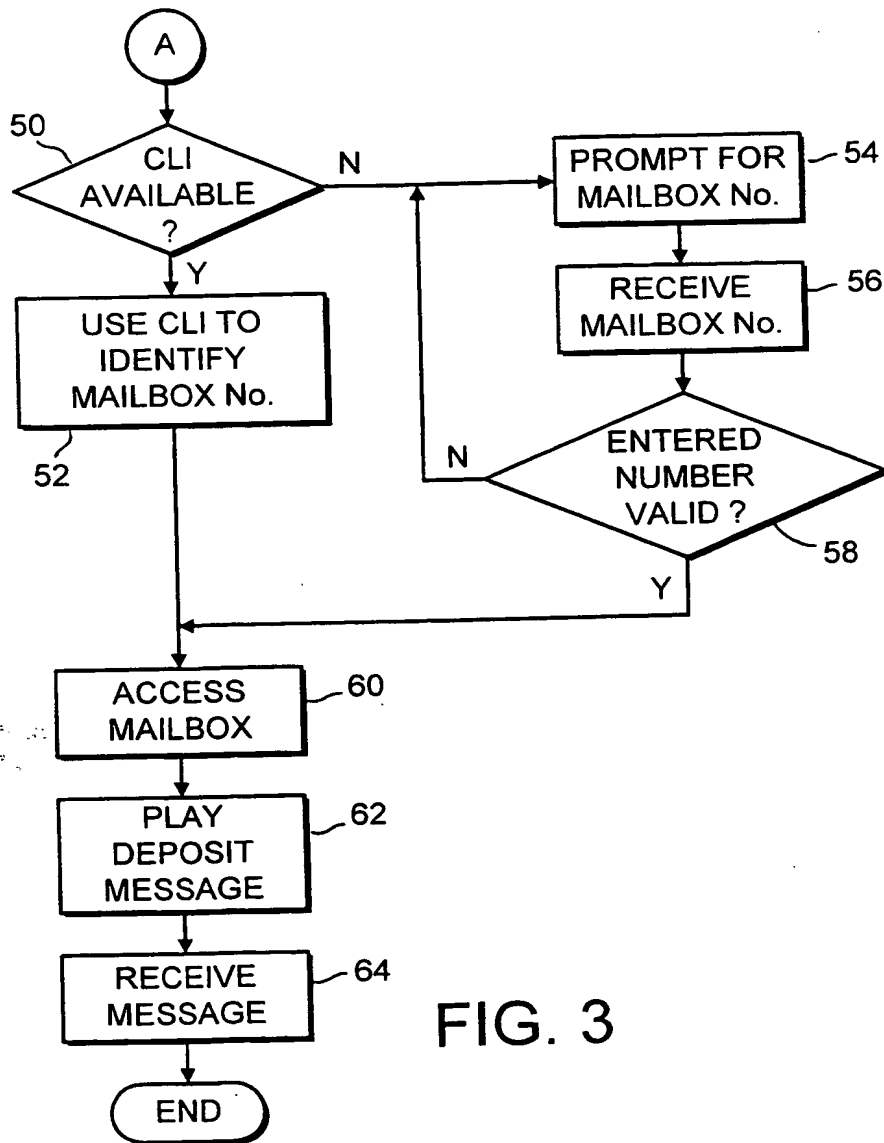


FIG. 3

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NORMAL RETRIEVAL MODE

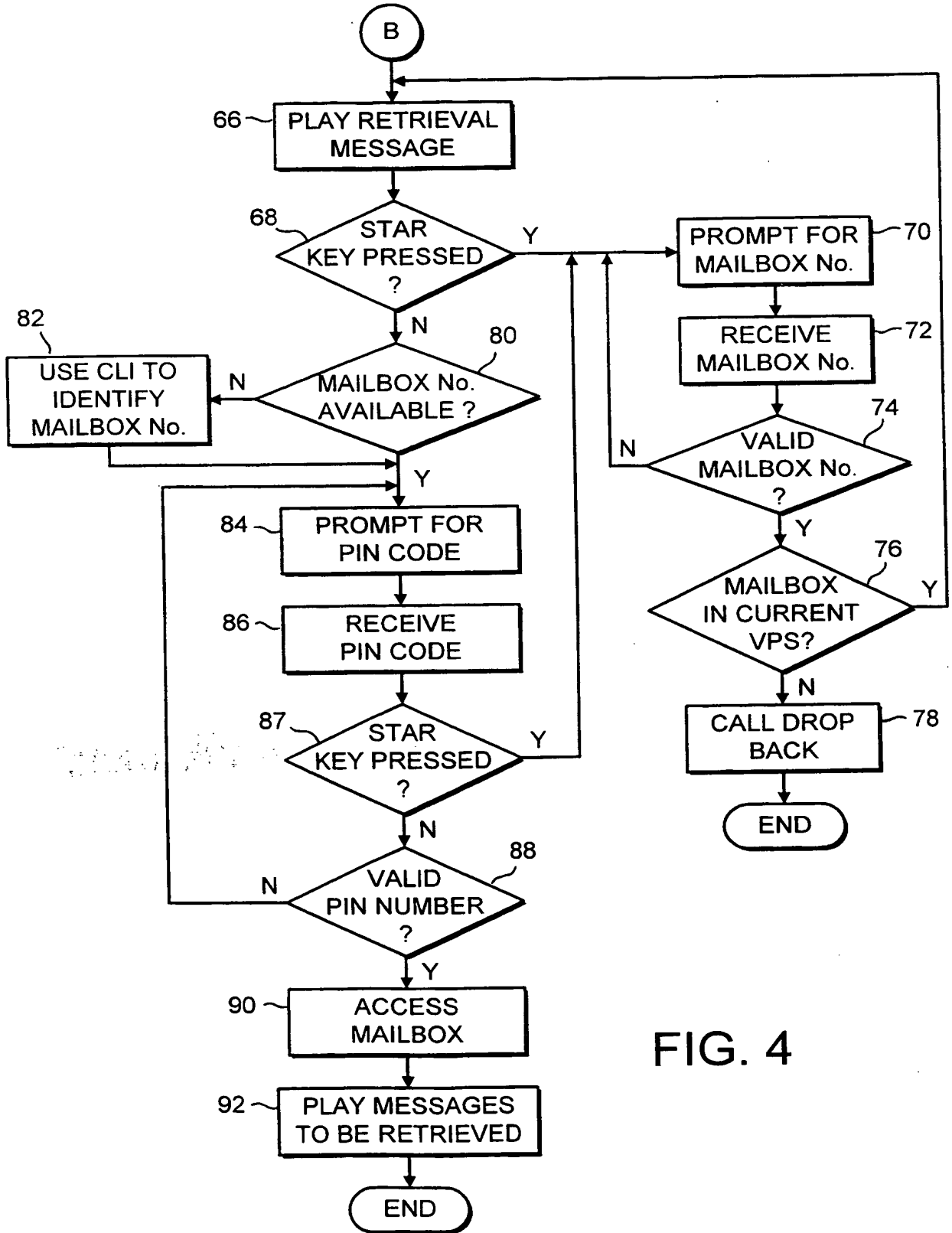


FIG. 4

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INTERNATIONAL MODE
(DEPOSIT + RETRIEVAL)

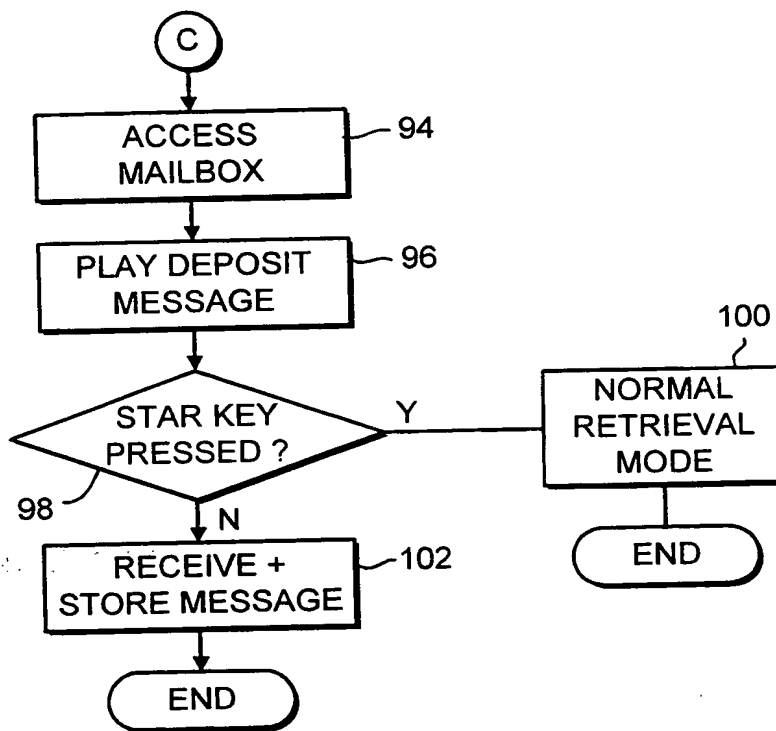


FIG. 5

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 98/03622

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04M3/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 0 631 452 A (COFIRA SA) 28 December 1994 see column 10, line 45 - column 11, line 6	21,22 1,10,13, 16
X	EP 0 588 101 A (ROLM CO) 23 March 1994 see column 6, line 12 - line 58	16

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

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- "E" earlier document but published on or after the international filing date
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- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

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- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

12 February 1999

Date of mailing of the international search report

19/02/1999

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Authorized officer

Leouffre, M

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 98/03622

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